

The starting period is finished when the fuel cell or stack reaches the lower limit of its normal or preferred operating temperature range Suitable means may be used to detect a cell temperature parameter indicative of operating temperature (e.g., thermocouple) and to signal the end of the starting period. (Id. lines 44-50, emphasis provided.)

Thus, insofar as Roberts' method involves restricting coolant flow, the restriction is based on the measurement of a cell temperature parameter, not on one or more monitored voltages.

The Examiner referred to certain specific portions of Roberts to justify the rejection. (Office Action at page 4.) But, Applicants do not see how these portions, or any other portions, of Roberts justify the rejection.

At col. 4, lines 58-63, Roberts notes the issue of voltage reversal in a fuel cell stack, and at col. 6, lines 52-55, Roberts discloses using starvation conditions to avoid voltage reversal. But, it is apparent that Roberts' reference to starvation conditions is addressed to limiting reactant supply, not coolant supply. (See, e.g., id. col. 3, line 19-col. 4, line 26 and col. 5, line 49-col. 6, line 16.)

At col. 8, lines 34-43, Roberts discloses:

Preferably during start-up, the fuel cell stack coolant (if present) is not circulated to allow rapid warming of the stack. As the stack nears its normal operating temperature, interior cells in the stack may overheat if no coolant flow is provided, but starting the flow of coolant can initiate a cell voltage reversal in the cooler outermost cells. Thus, care should be taken with the timing and rate at which coolant flow is commenced to avoid voltage reversal and/or overheating.

This paragraph does not show that Roberts discloses a method that includes restricting coolant flow when one or more of monitored voltages decreases from a predetermined voltage range.

At col. 10, lines 35-40, Roberts discloses:

FIG. 2 shows the voltage and temperature versus time for fuel cell B. In FIG. 2 only, the flow of coolant through the fuel cell began once the monitored temperature in the fuel cell reached 80°C. The starting

temperature of the coolant was also -5°C and the fuel cell was its only source of heat. Thus, introducing this relatively cold coolant precipitated the marked drop in interior temperature as seen in FIG. 2. (Emphasis provided.)

This portion of Roberts does not show that his method included restricting coolant flow when one or more of the monitored voltages. Rather, it shows that Roberts was manipulating coolant flow based on a monitored temperature. Perhaps Roberts was monitoring a voltage, but he was not restricting coolant flow based on monitored voltages.

The Examiner said "according to Fig. 2, the voltage appears to decrease with restricted coolant flow". (Office Action at page 4.) But, Applicants do not believe that Figure 2 shows such a correlation. Figure 2 of Roberts has two curves. The upper curve shows cell temperature vs. time, and the lower curve shows cell voltage as a function of time. For the portion of Figure 2 where coolant flow is indicated, Applicants simply do not see how Figure 2 shows the alleged relationship between voltage and coolant flow.

In view of the foregoing, Applicants request reconsideration and withdrawal of the rejection of claims 24-29 under 35 USC § 102(e).

The Examiner rejected claims 1, 7-10, 12-23, and 30-38 under 35 USC § 103(a) as being unpatentable over Roberts in view of Parise (U.S. Patent No. 6,057,050, "Parise").

Claims 1, 7-10, 12-23, and 30-38 cover methods that include monitoring voltages of a set of fuel cells and restricting coolant flow when one or more of the monitored voltages decreases from a predetermined voltage range.

As explained above, Roberts does not disclose such methods. Nor in Roberts is there a suggestion to modify his method to provide the methods covered by claims 1, 7-10, 12-23, and 30-38.

Parise does not cure Roberts' deficiencies, at least because, like Roberts, Parise does not disclose or suggest the methods covered by claims 1, 7-10, 12-23, and 30-38.

Neither Roberts nor Parise, alone or in combination, disclose or suggest the methods covered by claims 1, 7-10, 12-23, and 30-38. There is no suggestion to combine these references to provide such methods. Even if the references were combined the result would not be the

Applicant : Arne W. Ballantine et al.
Serial No. : 09/896,268
Filed : June 29, 2001
Page : 4 of 4

Attorney's Docket No.: 10964-057001 / PP 765


methods covered by claims 1, 7-10, 12-23, and 30-38. Accordingly, Applicants request reconsideration and withdrawal of the rejection of claims 1, 7-10, 12-23, and 30-38 under 35 USC § 103(a).

Applicants believe the claims are currently in condition for allowance, which action is requested. Please apply any charges or credits to deposit account 06-1050.

Respectfully submitted,

Date: _____

4/12/06



Sean P. Daley
Reg. No. 40,978

Fish & Richardson P.C.
225 Franklin Street
Boston, MA 02110
Telephone: (617) 542-5070
Facsimile: (617) 542-8906